

TECHNICAL DEPT.

FEB 17 1923

AVIATION

The Oldest American Aeronautical Magazine

FEBRUARY 13, 1923

Issued Weekly

PRICE 20 CENTS



The French airmen Costes and Lebrun flying over Gatun Lake, C. Z.

VOLUME
XXIV

NUMBER
7

Special Features

Light Airplane Clubs
The Thaden "Argonaut"
The Value of Advertising

AVIATION PUBLISHING CORPORATION
250 WEST 57 STREET, NEW YORK

Publication Office, Highland, N. Y. Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879.

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This tremendous volume of business in the airplane field has put them in the first rank as regards knowledge of service to the ultimate purchaser.



They are now taking shipments of WACO planes faster than we are able to build them. They will gladly demonstrate WACO features and explain their facilities for service.

Through the WACO Distributor organization you are able to get all the personal service on ship or motor that you have become accustomed to expect from the automobile dealer. In addition their service includes flight instruction.

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And Many Others



Announcing A NEW DISCOVERY

A Pure Paraffin Base Oil • • • Free Flowing in Both
Zero and Summer Weather

A NEW lubricating oil is on the market. It is the original and only oil developed to meet the specific needs of aircraft engines. . . . The oil is both zero and summer weather. The name of it is . . . AMLO.

All Weather is Alike to AMLO

Lubricating engineers, motor experts and the layman have long recognized the many advantages of a Pure Paraffin Base lubricating oil and also its one stumbling block . . . cold weather. Cold weather makes the way in the oil tend to congeal and thus hinders perfect lubrication.

AMLO has every particle of wax removed. It is the first and only Pure Paraffin Base lubricating oil to be made 100% wax free which gives it better fluidity at low temperatures than any other oil.

Autentico, recognized AMLO for use on both zero and summer weather.

The development of this machine oil is the result of scientific study and development and the invention of safety new processes. It has been subjected to and passed every test, and meets an exacting every required specification.

AMLO is from the world famous Ranger Pure Paraffin Base Crude oil supplied by our own wells . . . produced in our own wells, pure, low viscosity and refined in our own plants in every. From well to you, uninterrupted.

33 1/3% More Flying Hours

One result of AMLO is 33 1/3% more flying hours of perfect lubrication. . . . As all weather, summer, changed oil. . . . AMLO is not yet available in your territory, write direct to the Company.



AMLO OILS									
GRADE	WATER	WAX	WAX	WAX	WAX	WAX	WAX	WAX	WAX
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
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TEXAS PACIFIC COAL AND OIL COMPANY
FORT WORTH, TEXAS

BACK OF THE CONDOR



BACK of the Curtiss Condor Bomber are the engineering and manufacturing resources of the Curtiss Company—the only complete aeronautical laboratories in the industry, a skilled personnel that has been building outstanding aircraft and motors for seventeen years, and an expanding staff that is without a parallel in skill and experience.

That is the reason why the Condor was the first bomber in the new Army competition to be delivered to the Air Corps. It is the reason why the Condor is to date the only bomber of those in the competition to have successfully completed all of its tests.

And it is the reason why the combination of the Condor plane with the new 600 H.P. Curtiss geared V-1550 motor has shown a performance that far outstrips the usual conception of bomber performance.

The CURTISS AEROPLANE

Offices:
Garden City, N. Y.



AND MOTOR CO., Inc.

Factories:
Garden City and Buffalo, N. Y.

FOR MAIL AND EXPRESS SERVICE THE PITCAIRN MAILWING



*A plane designed
to meet the specific requirements
of both day and night air-mail
and express transportation*

▲ ▲ ▲

The Mailwing has an unusually high performance combined with a marked degree of maneuverability and ease of control.

Engine location allows use of square-sectioned tubing with built-in wing struts and other features. Equipped with wide-track split axle undercarriage, fixed shock absorbers, wheel brakes and complete night flying equipment.

Pitcairn Mailwings are now in service on the lines of the Colonial Air Transport, Inc., the Colonial Western Airways, Inc., the Varsity Air Transportation, Inc., and the Cleveland-Youngstown-Parma Air Mail Route.

SPECIFICATIONS

Motor - Wright Whirlwind J-3-C	200 H.P.
Pay Load	100 lbs.
Cruising Speed	112 m.p.h.
(under max.)	131 m.p.h.
Top Speed (with landing flaps)	145 m.p.h.
Landing Speed	45 m.p.h.
Rate of Climb (right)	1600 ft. per min.
Weight, empty, including night flying equipment	1740 lbs.
Normal Cruising Range (at 100 gal. gasoline)	400 miles
Price, fully equipped as shown	\$18,000
Atkins, Pa.	

▲ ▲ ▲

Increased factory production now makes Mailwings available to operators of other air transport lines. We will gladly send detailed information at your request.

PITCAIRN AIRCRAFT INC.

LAND TITLE BUILDING, PHILADELPHIA, PA.





OUTSTANDING among the notable Achievements in Aeronautics during 1927 was the capture of Four World Records by the new Vought "Corsair" Airplane.

OUTSTANDING because these World Records — One for Altitude and Three for Speed — were made with a *strictly stock* naval service "Corsair" Seaplane.

OUTSTANDING because these records were made without special preparations, the airplane, engine and propeller being the original service equipment delivered in October 1926 and used, without changes or modifications, in all flights since delivery of the plane, even to date.

OUTSTANDING because each and every Vought "Corsair" is guaranteed to equal or better these World Record performances; and is sold with such a guarantee.

Ten or as many Miles and Hours were flown in Vought Airplanes during 1926 and 1927 in the U. S. Naval Air Service and in any other type



**CHANCE VOUCHT
 CORPORATION**
 LONG ISLAND CITY, NEW YORK



WASHINGTON, D. C. to Mexico City ... another brilliant non-stop flight by Colonel Charles A. Lindbergh and his faithful Ryan plane, the "Spirit of St. Louis". On its Coastwise City, before San Salvador, Tegucigalpa, Managua, San Jose, and Panama City. At this writing, January 11th, the "Spirit of St. Louis" has flown about 10,000 miles ... running so true to schedule in the Twentieth Century Limited ... without an overhaul ... with less care than you would give your automobile ... and as an excellent evidence in The RYAN BROUGHAM is a testimony of this to your plane. It is just as well engineered — built with the same care — has the same motion. Owners in all parts of the country and abroad praise its performance with sincere enthusiasm. In Your

RYAN BROUGHAM will have wheel brakes, 32 x 6 inch tires, hand starter, reversed gear compass, turn and bank indicator, carbon heater, leather cushioned chairs, velvet upholstery, curtains, wind shield wiper, hotshot battery, dash light, navigation lights, a spacious baggage compartment, and two full width sedan type doors in addition to the regular instruments that have been furnished. Write or wire for complete information, B. F. MAHONEY AIRCRAFT CORP.

**"WE"
 continue
 to make
 HISTORY**



Letters from *three* continents

From Col Skala of the Czechoslovakian Army, who flew from Prague to Tokio—about 9,000 miles.

《军国大政要略》(卷下) (1937)

Messrs. Vacuum Oil Company, Toledo

Tobias, Bensenville, 1991

DEAR SIR: Is the fight between Prague, Czech-Slovakia, to Tokyo, Japan I used Gargyle Mobiel - D² on my engine. I am pleased to state that this oil gave every satisfaction and the engine functioned perfectly.

J. Sivola, Flight Colonel

In an amazing flight Capt. C. Kingsford-Smith and C. T. P. Ulm circumnavigated Australia, a trip of nearly 8,000 miles, in 16 days, breaking all former records. They enthusiastically give much credit to Mobiloil in their letter quoted below.

July 4, 1987

Macquarie Oil Company, Pty. Ltd., Melbourne.

GENTLEMEN: So far as we are concerned, our round-the-world flight around Australia is not finished until we have written you personally to thank you and your staff for the wonderful service they have given us.

We still feel that we have not said enough about it, but if there is any aspect regarding the quality of your products and the excellence of your service which we have omitted to mention, it is just because facts were so good, and it is impossible to think of everything.

Again thanking you, and assuring you that our flight around Australia could not possibly have been accomplished in the time it was without the most wonderful help given us by your Company as an organization, and by your staffs individually.

They're very expensive

Red-Necked Phalarope

C. Kung'u-Geetho

C. T. P. Use

From Charles W. Mayers, winner of Class B New York-Berkshire Air Derby.

Tong. Chus., October 8, 1977

My 2nd W/ Christmas

515 East Morgan Avenue, Dayton, Ohio

DEAR Mr. Graham: Want to thank you for your efforts, and also those of the Vietnam GI Company personnel, that helped during the recent New York-Sydney Air Derby.

As you know, I was lucky enough to win first place in Class B, using Mobil 1 "B" oil, as usual, and with the usual perfect results.

The service of your men and product had a great deal to do with the winning of that race, and I want to take the opportunity to express my appreciation.

Three lucky winners.

Charles W. Meyers, Test Pilot

The Advance Aircraft Company





To excel in design and performance—to surpass in every detail from which a reliable aircraft engine is judged—to be superior in mechanical excellence—such has been the ideal and fulfillment of Wright.

This Organization's active interest does not end with the sale. A widespread Service Department is maintained to see to it that the product of this Organization never falls below Wright Standards.

WRIGHT AERONAUTICAL CORPORATION
Patent, New Jersey U.S.A.

WRIGHT

*That's why
New Pilots fly them!*



The Oldest American Aeronautical Magazine

14 XXIV

FEBRUARY 13, 1926

No. 7

Setting a Precedent

WITH NO idea of pulling out dirty linen just for the sake of giving it another airing, attention called for the moment to a recent event that happened in the State of Connecticut when an internationally known pilot was sent to jail for breaking a flying law that he broke who was performing a law flying a machine which admittedly broke a "rule" for the time as well as the nation, but yet at the same time extremely dangerous and foolishly regardless of the state still with a joy-stick.

There have been many pilots who have broken that old law and it is highly probable that the future will also see more than a few alien saying "Good morning, Judge!"—after many years of enforcing traffic regulations the courts are still punishing motorists. And he who is not inside the Connecticut affair is an example of what will happen to a law breaking pilot.

The important point is that—in it should be in every day—the flying law in Connecticut does not recognize men or women. A pilot well known throughout the entire aeronautical world violated the law and he was treated the same as would have been treated a young man with but a few safe lands to his credit. In the final analysis a law is a law and everyone and also none who break it should be punished alike. Perhaps the Connecticut affair will be a lesson to that famous pilot, but either so or no, that state has at least established a precedent in the enforcing of flying laws that is worthy of general adoption.

Refinement In Design

WHEN THE shock of war surplus OX engines ran out they will have to be replaced by very much more expensive engines. In the future the cost of the engine instead of representing less than ten per cent. of the total cost of the plane will represent somewhere between one third and one half of the total price. When in the past manufacturers were war surplus planes have had to produce efficient planes in order to carry the heavy engines, manufacturers in the future will have to produce efficient planes so as to reduce the expense of the engines and the price of the plane.

In the past it has been possible to replace an OX engine with an engine of more than the horsepower on which weighted little more. As the new engines will all weigh about the same amount per horsepower it will not be possible to use such a wide range of power in the same plane, for doubling the power would naturally mean doubling the weight. If a new engine

of 90 hp. is fitted in place of the OX, the performance will be very considerably increased but it is very probable that many owners and operators will prefer to keep the performance about the same and lower the price by putting in a less expensive engine.

Whether the owner wishes in line of performance he will always want the plane to be as cheap as possible and in order to accomplish this the manufacturer will have to go even further than he has in the refinement of his design. With engines representing half the cost of the plane the ultimate cost of plane refinements to the buyer will be very much less than was the case when war surplus engines were used. The new engines are going to make it both possible and worth while for manufacturers to improve their designs and we may look for much greater efficiency in the small plane class.

Aircraft and Insurance

PASSENGER and aircraft insurance has been going around in a vicious circle for many years. Aircraft operators have not taken out insurance because the rates were high and rates could not be lowered until there was a greater volume of business. Fourly operated and disbanded companies have lost the insurance companies money and the costs have been passed on to the insurance companies which were well operated. Thus both the insurance companies and the operating companies have suffered and aviation has been severely penalized.

This situation has begun to change. Not only is there more flying but the investors who have put their money into aeronautical enterprises have insisted on having their investments safeguarded by insurance. As a result of this the insurance companies have had a greater volume of business to handle and so could spread their risks and diminish their overhead. Recently important has been the gradual accumulation of knowledge which has enabled underwriters to pick the good risks and to stay away from those on which they would lose money.

This situation will be still further improved when aircraft and passengers are more widely insured. In every other type of business enterprise insurance is practically universally earned and experiences has shown that it is on the whole profitable both to the business and to the insurance companies. Every aircraft operator should find out all he can about insurance for even if he does not feel that he wishes to carry it for his equipment he should certainly be able to offer it to his passengers. Insurance is a great stabilizer and the fact that it is carried will put any owner on a sounder basis and do much to restore its continuance.

The pamphlets are distributed by the dealer to the young men in his territory.

Another dealer help in the "Alexander Aeronauts." This is a strictly between manufacturer and dealer newspaper. It keeps the dealer fully posted on the company's installation and sales activities and provides inter-telephone news that puts each dealer on the best sales and advertising methods used by others.

New course advertising that is more of a local interest—based in behalf of the manufacturer and the Alexander Aviation school, and in each school's economy and territory.

"Classified advertising is one of the best mediums in the local field," says Mr. Wintrop, who qualified his statement by pointing out, "Providing it is properly constructed and given a good position. By means of classified advertising we sell our rides, the aviation school and incidentally airplanes. We urge all of our dealers to use this form, if the newspaper in their communities are made up in such a manner as to provide the right position."

"The Denver newspapers are made up in sections, on Sunday, and the classified ad section has a front page all its own. We seek a position on this front page and just above the fold. The ad of the one or two line wish of type, but is a minimum display ad—a cross between a display ad and a notice, for the body of the ad is small. The advertisement is inserted on both sides and there is some white space at the top and the bottom. I find that there are three words, any one of which, when placed in the heading, will attract maximum attention. They are—

FLY—AIR—AIRPLANE

"None of the headlines we have used are
"AIR RIDES," "AIR AIRPLANE RIDES," "GET OFF THE KANTH, LEARN TO FLY."

"We always get our Sunday advertisement in early in the week which means at getting the front page position and above the fold. Friday night and Sunday morning are the best days of the week to advertise in the local papers. Tuesday is also a good day. And for advertising air rides, the aviation school, etc., I would rather have a semi-display ad on the front page of the want ad section than a quarter page display ad on an inside page of the same section."

"We must use distributors with their local advertising problems. Every distributor, when he comes to our plant to sign up for his territory, is sent to the department sometime before he leaves, to discuss local advertising."

Notice picture advertisement is provided the dealer free of charge. Little picture advertising advantages and pleasure in flying may be had every week by any dealer to be shown in the theatre in his community or in the theatre in his territory.

An example of one of these playlets is contained in the following—

PERSONALS

SAFE AIRPLANE RIDES

Low price, \$1.00 each person, with expert pilot.

EAGLE ROCK
America's most popular airplane.

(Specially adapted for instruction)
in Southern Arizona

STUDENT INSTRUCTION LONG FLIGHTS

ALEXANDER AIRCRAFT CO.
of this State

A reproduction of local newspaper classified advertising

The play acts on a living scene where a lady, whom welcoming her husband after an airplane trip, exclaims: "BACK SO SOON?" There is a real scene, the action as he takes off his helmet and goggles, and is further flying suit. His wife, looking at his remarkable performance, says: "AND SO CLEAN?" The actor wears the trademark ribbon enthusiastically: "QUICK AND CLEAN—THAT'S EAGLE ROCK AIRPLANE TRAVEL." The scene takes place on a stage set up, ready for a black photograph, giving the name and address of the Eagle Rock dealer in that territory.

"News stories pertaining to the activities of the dealer of the best kinds of publicity," says Mr. Wintrop. "We use each dealer to look-up with the leading newspaper as a community of possible in the next largest, for the size of obtaining news publicity. He must make a concerted effort to get the newspaper's attention. He will be able to publish stories concerning his activities, some of his own and flying school. In return he stands ready to send to newspapers when quick transportation of news items or pictures is necessary to cover some big event. He must expect remuneration for his services if he expects news coverage of things."

One of the best stands in the little certificate taken on pilot of an Eagle Rock gives every passenger to take it certifies that Mr. and Mrs. have made a flight in a particular plane on such and such a day and made an altitude of so many feet at a speed of so many miles per hour. The number of the plane is indicated and it is signed by the pilot. The card is good for a certain amount of credit in a plane if purchased within one year of date.

The size is just right to fit into a card rack, and the purpose is two-fold: to help the passenger prove to friends he actually has been in the air, and to keep the name of the

This is to certify:

That Mr. and Mrs. A. B. C.
THE ALEXANDER AIRCRAFT COMPANY

On the 1st Day of Jan 1928

Altitude 5,000 ft. Speed 100 m. p. h.

Engine No. 1234 Pilot A. B. C.

This card good for 10 days of credit in a plane if purchased within one year of date.

Fly in Safety Flight Easements

A reproduction of passenger flight cards that are used in the Alexander Aircraft Co.

plane fresh in the mind of the passenger and to present him to his friends when they look back on the certificate.

Being on an airplane is still such a novelty that people like to talk about it to their friends. To prove that they have up a card, they sometimes like to show it to their friends. It is not out of his pocket and show it to his friends will prove the performance of the plane he rode in, and to friends who are looking for the card, with name, number of the name of the plane and will remember to look it up in the future.

In connection with the Alexander, president D. M. Allen, vice-president Mr. Wintrop, advertising manager J. A. McHenry, sales manager, all agree that although greater percentage of the advertising does not come from the company or its product, the advertisement comes from sales.

Light Airplane Clubs

An Historical Review of English Clubs and the Part They Have Played in the Progress of English Aeronautics

By AN ENGLISH CORRESPONDENT

The identity of the author of this article is known to AVIATION, but at his request he does not give his real name.

TO THOSE of us in England who are seriously concerned with the development of aviation as a sport and as a means of transport generally it has long been surprising that the light aeroplane club idea has not been adopted in the United States. The small area of the Boston lake, and the similar position of the country, continue to be the only solution of the aeroplane as a public transport and there is nobody who has been operating within the kingdom. Strictly taken it is relatively little scope for the privately owned aeroplane. But in the United States there is, or so it seems on the face of it, everything in favor of the formation of at least one club in every state, followed very soon by the private ownership of literally thousands of light aeroplanes.

It does not seem possible that another year will pass before organizations such as now exist in England come into being, not only in the United States, but in all parts of the world and we should soon descriptions of the British clubs, their methods and their organizations will at least be interesting, if not actually useful.

Competition Failed to Produce Suitable Planes

Early in 1921 the Air Ministry prepared a scheme for the formation of light aeroplane clubs, which were to be officially aided and which it was proposed would use light aeroplanes selected from several types at that time being built for the Light Aeroplane Competition, to be held at Lysiane in the latter part of that year. A number of entries received consideration and it was decided to select not more than six at all different parts of the country, and to make tentative proposals, either to existing organizations, or to individuals who would make themselves responsible for the formation of clubs. The first one back concerned with the London Aeroplane Club. The London Aeroplane Club, in the opinion of the Air Ministry, was suitable for their purpose. It was not intending to show this. It will be remembered that the first competition held in England were for motorless gliders. The following year would machine driven light motor gliders, and the next year would be for motorless gliders. It was still, when the two-year competition was held, it naturally follows that nobody had thought of what subsequently became all too obvious—that if such machines were to be used for the training of pilots, such aircraft as these would be necessary and such means powerful engines would be needed. The formation of the club was then, realizing that this dual accident occurred in the early days of our air club would, in all probability, put an end to the attraction of every club. This may seem to be a very pessimistic outlook. However, whether it is or not, we cannot say: the

state aided clubs have now completed nearly 10,000 hr flying and during all that time only one member has been injured while flying a club aeroplane.

About this time, fortunately, the De Havilland Company produced the "Moth," not by any means a light aeroplane as the name was understood then, but sufficiently light to give more force to the position of the motorless club. The airplane was a machine of this type very much more and that nothing of lower power or lighter construction would be acceptable.

The scheme then went forward and five clubs (the sixth was unable to make a start) entered into an agreement with the Air Ministry. This agreement, which lasted for two years, covered the provision of equipment for each club to the value of £10,000, a grant towards the cost of maintenance amounting to £5,000.00 in each year, and a payment of £500.00 for a number qualified for the pilot's license. Most of the clubs provided themselves with two aeroplanes and a spare engine from the Royal Aircraft Establishment, and in July, 1923, the London and London Clubs commenced operations, slowly followed by the Newcastle and Midland (Birmingham) Clubs. The Yorkshire Club was unable to find a suitable aeroplane and could not start until later. About a year after, another club was formed in Hampshire and successfully applied for the sixth subsidy.

Unable to Obtain Air Ministry Subsidy

During the past twelve months several clubs have been organized in different parts of the country. They were unable to obtain a subsidy from the Air Ministry but many were successful in securing unopposed financial support from prominent business men and so have been able to purchase aeroplanes and make a start. When a new agreement was entered into between the Air Ministry and the six originally subsidized clubs in August, 1927, however, it was possible for several others to announce that three further clubs were to be brought into the scheme. These three clubs are at Bristol, Norwich and Glasgow.

This new agreement is on a very different basis from the first. It has obviously been learned in course that the Air Ministry's intention, usually, to train pilots and keep them trained, should be carried out as closely as possible. Under the old agreement it was not necessary to fly any given number of hours per year, although it was generally understood that any club whose flying time was very much less than that of the other clubs was in danger of losing its subsidy. In at least one club it was found that a small group of members, having more time and more money to spare than the majority, were responsible collectively for quite a large proportion of the total flying hours. This was agreed, however, provided, in the first place, for a small number for



Floats for Navy Q55-2 (Vought "Comet") amphibian under construction at the Brewster plant.

Brewster and Co. Activities

Long Island, N. Y., Firm Enters Commercial Field After Building Service Pontoons and Floats Since the War

A SHORT TIME ago an announcement was made by Brewster & Co. of Long Island City, N. Y., that it was going to do commercial airplane work besides continuing its military contracts. For many years Brewster & Co. has been manufacturing seaplane floats or pontoons, as well as flying boat hulls for the Government Air Service.

The Brewster factory in Long Island City, where high grade automobiles before are produced, is manufacturing at present pontoons and wing tip floats for the Boeing Airplane Co., Chance Vought Corp., U. S. Navy, and hulls for the amphibian planes for the Leaning Aircraft Engineering Corp., as well as special work for various manufacturers, the Army Air Corps and the Bureau of Aeronautics. This includes pontoon and oil tanks of welded aluminum, riveted duralumin and Naval metal, aluminum boxes, welded steel tail surfaces and skids.

Under Contract With Chance Vought

Brewster & Co. is under contract with the Chance Vought Corp. for the manufacture of metal pontoons and wing tip floats for the Vought "Comet". The main floats for the Vought "Comet" are built entirely of duralumin with the exception of the steel fittings, special nose bumper, spray skirts and valvage of wing. These floats are divided into six watertight compartments by a centerline and transverse bulkheads.

After construction and before painting the floats are thoroughly tested for watertightness. This applies not only to the outer skin, but also to each watertight compartment, and it is accomplished by filling one compartment at a time. The

static pressure developed by this method is considerably higher than the pressure that would be developed if the float were covered and air weighted down with a weight corresponding to that of the plane. It has a distinct advantage over the measuring oil method, in that it absolutely covers the whole bottom of each bulkhead.

In the design of the float there is incorporated a rubber nose bumper, the contour of which conforms the duralumin frame. These floats were the first ever put into production with this type bumper and that enabled the aerodynamic designs to reach a free point. After construction the interior of the floats is thoroughly protected from corrosion by two coats of bituminous solution. The second coat of bituminous



An all metal nose float for the Vought Q55-2 built by the Brewster Co.

agreed with aluminum to increase the visibility on the water in the float, and to enable the service to keep it afloat.

The wing tip floats are streamlined remarkably well, and the only wing tip floats of this shape manufactured with a wing tip consisting of only two pieces of metal. There are two watertight compartments in each wing tip float and they are tested upon completion for watertightness by being filled with water. Vought pontoons are being produced at a rate of six a month.

Each is now starting an all sets of seven and wing tip floats in the flying PTB-1 displaced lighter. As these floats are now produced for the U. S. Navy, for military reasons details of their construction cannot be published at this time. The wing floats are perhaps the lightest ever placed in production, having a displacement of approximately 22 1/2 tons and of float, which is one of the lightest values ever obtained in any seaplane float built to Navy specifications and requirements and capable of being catapulted.

Parts are Checked Carefully

In all float floats produced by Brewster & Co. the outer skin is fastened by the use of special oval head doming machine bolts. This permits of a considerably smoother surface than riveting, and also facilitates the painting of the float. On all production floats all parts are checked very carefully and are interchangeable to a high degree, assuring a comparatively limited production.

Two experimental metal floats are under construction for the Bureau of Aeronautics for use on the Q55-2, and estimated not to work more than the steel floats now in service, i. e., 325 lb. Metal metal weighs three and one-half times as much as duralumin, but can be used approximately as it is very highly polished in corrosion, and is fast



An all metal main float built by the Brewster Co.

than machine to most needs. Steel one, however, must be due to duralumin displaced metal as the duralumin when used tend to destroy the duralumin parts, therefore the steel float and all fittings are to be of steel.

The Leaning Amphibian hulls are of the composite duralumin and wood structure described in the Oct. 24, 1927, issue of AVIATION. Brewster & Co. have been manufacturing these hulls for Leaning starting with Leaning Air Tachts after the war.

Up to the past year the Brewster aeronautical facilities has been largely used in the production of experimental hulls for the Navy Department. Among the floats produced was the float built for the TB seaplane in 1922. (These, inci-

dentally, were the lightest TB floats ever produced, weighing only 115 lb each.) In 1925 two floats were produced for the TB seaplane and in March, 1926, experimental floats were built for the TB-1. All of these floats are still in active service.

Brewster & Co. also has in production now ships of Amphibian for the Army Air Corps. These are made up with a corrugated duralumin sheet on the bottom riveted to a



All metal Vought Q55-2 wing tip floats built by the Brewster Co.

welded steel truss that mounts on the axle normally provided for the wheels. This truss is riveted with screws to keep all the more as well as to fix the skin.

Welded steel tubing and other parts are produced at the rate of two a week for the Wilbur University complex constructed by the Atlantic Aircraft Corp. Gasoline tanks are being manufactured for Leaning Aircraft Engineering Corp., Travel Air Manufacturing Co., Chance Vought Corp. and the Bellanca Aircraft Corp.

Farman Expert Becomes New Chief Engineer of AC Spark Plug Co.

JOSEPH ZILBARTY was recently appointed chief engineer of the AC Spark Plug Co., succeeding to an announcement by H. W. de Groot, president and general manager. Mr. Zilbarty was at one time chief engineer of the H. and M. Farman Co. of Paris, one of the leading French airplane companies. He designed and developed the Farman airplane and automobile engines which have achieved many records. Mr. Zilbarty has contributed to the development of the AC spark-plug as well as of other new instruments recently put into production by the company, such as magnetos, oil pumps, throttle governors, and turbochargers. The new chief engineer, who has been in charge of speedometer and other instrument development at the AC Spark Plug Co. for several years, is one of the foremost engineers of precision instrument in this country and is prominently known in Europe for his outstanding contributions to the industry in his specialized field.

Alexander Starts New Year With Many Unfilled Orders for Planes

THE ALEXANDER Aircraft Co. started the year 1928 with 137 unfilled orders for Replicators waiting for earliest possible delivery, according to a company report made recently. During the final week of the old year, 14 such orders were completed.

During 1927, the company delivered 384 planes as compared to 54 the previous year. An increase of 676 per cent. was thus made. Because of weather conditions, a part of the final deliveries were made via railroad.

The Cirrus Mark II Engine

An English Four Cylinder in Line, Direct Drive, Vertical Air Cooled Engine Rated at 78 Hp. at 1800 R.P.M.

THE CIRRUS Mark II engine, manufactured by the A.D.C. Aircraft Ltd., London, England, has in the past two years established an enviable record. This engine has been supplied to all of the light aircraft clubs included by the British Air Ministry, and, in addition, the engines have been used on flights from England to India and to South Africa as well as on air tours in Europe and Australia. Cirrus engines, plain, clean, light, simple, reliable record, the light plane no-stop record, and the distance record for a pilot unaccompanied. The engines have also been in the winning places of the King's Cup Air Races for the past two years, winning both first and second place this year.

Designed by Maj. Frank B. Halford

The Cirrus is a four cylinder in line, direct drive, vertical, air cooled engine. It is very simple in construction with all of the accessories on the right side. In May, 1932, the Cirrus engine passed its first 180 hp. type test and has been since improved until it is now rated at 78 hp., at 1800 rpm. It develops a maximum of 51 hp. at 2,000 r.p.m., and weighs 216 lb. The engine has a wet sump and, therefore, when considering the weight per horsepower it should be realized that the weight of an oil tank, pipe lines, collector rings, etc., is included. The Cirrus engine was designed by Maj. Frank B. Halford, principally for use in the De Havilland "Gipsy" low powered light plane engine. Low cost, ease of maintenance and reliability were the main considerations.

The four air cooled cylinders, which are vertical and in line, are of cast iron with cast aluminum alloy heads. The heads are held down by four long bolts to the crankcase. In the joint between the head and the cylinder there is a cop and a rubber seal. By removing the four bolts, the head of the Cirrus Mark I by 5 mm. making it 110 mm. (4.33 in.) and changing the head slightly, the maximum horsepower was increased from 65 hp. to 84 hp. The valves are of the overhead type with two valves for each cylinder. The head of the intake valve is cupped while the exhaust valve is flat. The valve seats are of phosphor-bronze in the cylinder head. Two concentric helical springs close each valve, the intake and exhaust springs being interchangeable. The intake and exhaust parts have forged forgings to which the manifolds are attached by means of studs and nuts. The rocker arm brackets are die-cast forgings bolted to the head. The rocker arms are actuated by push rods from the camshaft located inside the crankcase. These push rods are driven

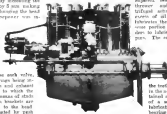


Lower half of the crankcase showing crankshaft and piston drive

slide tubes with two adjustments provided, one at the top and the other a short distance above the crankcase. The adjustments are readily accessible.

The camshaft is supported on three plain phosphor-bronze bearings. A spiral gear on the end of the crankshaft drives the oil pump, which is located in the sump. The lubrication is partly by pressure pump feed and partly by splash. The oil pump forces the oil through a pressure filter and then through the oil wires to connecting holes opposite each main bearing. The oil is then forced under pressure directly to each bearing. The crankshafts are lubricated by oil of gravity, or baffle, fed into the crank case. The oil overflowing from the oil pan is collected in the oil pan and forced out by centrifugal action to the crankcase. By means of oil thrown off the crankcase lubricates the other parts of the engine. The oil pump is of the type of oil pump into the cylinder to lubricate the pistons and piston pins. The camshaft, being open to the interior of the crankcase, has a coefficient of thrust rods, it is lubricated by the oil in the crankcase, after the oil has been and under a pressure of 10 lb. per sq. in. arranged near the driving gear so that it may be directed against the teeth of the gears. As oil is fed to the camshaft, a constant level is maintained at a certain level by means of a small pipe. This provides lubrication for the propeller shaft bearing.

One dual carburetor of the De Lillo type is used with an oil



Side view of the Cirrus Mark II Engine manufactured by the A.D.C. Ltd.

two passages of the manifold feeding two twin cylinders while the other two twin cylinders are fed by the other two. The manifolds are fitted with an adjustable needle. Dual carburetors are provided by two twin cylinder carburetors, one of them being fitted with an adjustable needle in each carburetor and each set of spark plugs are independent of each other two separate ignition systems are provided. The pistons are of cast aluminum with three cast iron rings at the top of the piston with the lower ring acting as a scraper. The piston pins, of hardened steel, are of the floating type and is located by a special clip. The connecting rods are die-cast forgings of H-section. The bearing at the top end is white metal in a bronze shell, and at the other end the piston pin bears directly on the crankpin.

Crankcase Divided into Two Parts

The crankcase is divided into two parts, the upper portion contains the crankshaft bearings and the main shaft while the lower portion forms the oil sump and carries the oil pump, relief valve and oil strainer, and also forms lower half of the upper thrust bearings. There are five bearings that support the crankshaft, the front and rear bearings are of the roller bearing type and the others of white metal in phosphor bronze shell. Thrust is taken by a ball bearing in the front of the crankcase. By a very slight difference in machining in bearing, the engine can be used as a pump. The engine is mounted on four supports each attached to the crankcase by four studs.

As was mentioned the Cirrus engine was developed with a view to low cost of maintenance as well as low initial cost. With a consumption ratio of 4.5 the fuel consumption is 560

lb. per hp.-hr. at 1800 r.p.m., and 518 lb. per hp.-hr. at 2000 r.p.m.

The air cooled engine with the cylinders in line is a field which has been only slightly developed in this country. The air cooled, converted Liberty engine being the only outstanding example though it is mentioned in some quarters that there will now appear on the American market a radial engine of this type. There are also reports that General Chamberlain has secured the rights for this country to construct Cirrus engines and later modifications than under license.

The general specifications of the Cirrus Mark II are as follows:

Bore	4.33 in. (110 mm.)
Stroke	5.12 in. (129 mm.)
Compression ratio	16 to 1 (16 to 1)
Normal hp. at 1800 r.p.m.	78 hp.
Maximum hp. at 2000 r.p.m.	84 hp.
Weight	216 lb.
Fuel consumption at normal hp. at 1800 r.p.m.	560 lb. per hp.-hr.
Fuel consumption at maximum hp. at 2000 r.p.m.	518 lb. per hp.-hr.
Oil consumption at normal hp. at 1800 r.p.m.	0.012 lb. per hp.-hr.
Height overall	2 ft. 3 in. 10 in.
Width overall	1 ft. 7 in.
Length overall	3 ft. 3 in.
Height above thrust line	1 ft. 3 in.

The Hamilton Metalplane Co. Starts Production of Planes

THE HAMILTON Metalplane Company, of Milwaukee, Wis., has leased a building at 530 Park Street and actual construction of the first group of five planes is under way. Parts for 25 planes will be made at once and a force of 20 has been engaged for this purpose. These planes will be assembled later in groups of five, the first to be ready for delivery about March 1.

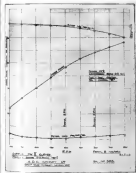
The planes are modeled after the Hamilton Metalplane, the all-metal monoplane, which has made a creditable record in a number of aerobatic contests. Facilities for the comfort of passengers will be provided in the sides of the plane which will hold four passengers and a pilot. Officers of the company include, Thomas F. Hamilton, president, Clarence R. Falk, vice-president, William F. Pahl, secretary, and Mark McCann, assistant secretary and production manager.

The directors are A. W. Fairchild, Col. Gustave Pahl, H. H. Seaman, August H. Vogel, S. B. Wray, Mr. Falk and Mr. Hamilton.

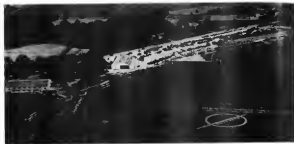
Four Agencies for Eaglerock Planes Operating in Florida

WESLEY N. RAYMOND, Eaglerock distributor in Florida, recently received a contract of planes for distribution to purchasers and is now making up sufficient orders for the first shipment.

Operating under the name of Raymond Aircraft Company, from the new Hawthorne Elder Airport, Lakeland, this active young man is well on the way to making Florida, Eaglerock-minded. He has established dealerships in Miami, Orlando, Jacksonville, St. Petersburg and is looking for other live wires like himself to take on portions of the state and yet covered.



Performance characteristics of the Cirrus Mark II engine by four endurance test



Aerial view of Pitcairn Field located at Wilkes-Barre, Pa.

Pitcairn Progress in 1927

A Brief Summary of Activities and Accomplishments That Gives Indication of a Successful Future

By W. LAURENCE LePAGE

Assistant to the Vice President, Pitcairn Aviation, Inc.

THE YEAR 1927, which has played so important a part in the history of aviation, has brought to Pitcairn Aviation, Inc. no full share of prosperity. The past year has seen strong foundations laid and the methods for 1928 processes well for the Company's continued rapid progress. As an indication, therefore, of the future a brief summary of the accomplishments of the past twelve months will prove instructive.

Early in 1927 the Post Office Department awarded Pitcairn Aviation, Inc. the contract for operating the New York-Atlanta Annual Line. Owing to unexpected difficulties experienced by the Department of Commerce in laying out and lighting the survey, it was not possible to commence operations in 1927. The Department of Commerce is convinced, however, that its work will be done by March first which will enable Pitcairn Aviation, Inc. to complete its test flying and start carrying the mail between New York and Atlanta around April first.

The New York-Atlanta Line is approximately 700 mi. in length and all flying on this route will be done at night. The schedule calls for the run being made in nine hours, whereas the fastest train service between these two cities is 22 hr. In addition to New York and Atlanta, stops will be

made at Philadelphia, Washington, Richmond, Greenville and Spartanburg.

The survey that was made prior to bidding for the New York-Atlanta Line brought out the extreme aviation possibilities of the South. With the idea of expediting the realization of these possibilities, the Company decided that the operation of municipal airports along the mail route could be handled to mutual advantage. Therefore, immediately following the award of the aerial line, efforts were made to develop cities and the close of the year finds activity on



Front quarter view of the Pitcairn Mailwing, geared with a Wright Whirlwind J-5-C engine.

January 13, 1928

and at Pitcairn Aviation, Inc. operating the municipal airports of Richmond, Greenville and Spartanburg and opening at the municipal airport of Atlanta, Ga.

Since the first of May large hangars with suitable repair facilities have erected, a fleet of commercial airplanes has been applied and a trained personnel has been installed at each of the four fields. Each operation includes the standard house flying school with facilities for 15, 24 and 50 hr. course. In addition the companies are adequately equipped to do and are doing a considerable amount of passenger service and cross country flying.

The past year has seen an unprecedented increase in the appreciation at Pitcairn Field just outside of Philadelphia. It would seem reasonable that this, believed to be the largest municipal flying field west of the Mississippi, should be the cause of extensive flying activities, but the year 1927 has defied all expectations. During the year 15,051 passengers were carried from this field. Located right on the main highway leading north out of Wilkes-Barre, Pa., each week at, even in the winter season, over the field crowded with visitors and flying enthusiasts. No less than 128 students were trained at Pitcairn Field during 1927 and many of these have been started on and taken advanced courses with a view to becoming qualified commercial pilots or experienced test pilot operators their own private airplanes.

A Total of 23 Planes

If the five flying fields already mentioned, the subsidiary airports of Pitcairn Aviation, Inc. have a total of 23 planes operation and an operating personnel of 25 experienced men. Despite the fact that Spartanburg did not open until September between April and October and Atlanta just at the close of the year, a total of 28,500 passengers was carried by Pitcairn Aviation, Inc. during the year.

In the fall, Pitcairn Aviation, Inc. made a careful survey of the proposed Atlanta-Miami Line and the Company was the holder when the proposals for carrying mail by air were opened. On Nov. 25, Postmaster General New announced the award of the contract of Pitcairn Aviation, Inc. to serve between Atlanta and Miami will include a stop at Jacksonville and covers a total distance of approximately 700 mi. The Atlanta-Miami Line will be run as a schedule flight commencing with the New York-Atlanta service next year. In the through service between New York and Florida through the Department of Commerce will light the Atlanta-Jacksonville section of the route and it is expected that this work will be finished so as to enable the route to be opened in the Fall of this year. When this line is in operation the four south will be brought within 25 hr. of New

AVIATION

365



Rear quarter view of the Pitcairn Mailwing De Luxe, geared with an OX-5 engine.

York City, and Pitcairn Aviation, Inc. will be flying the mail a little over 2500 mi. each day.

Another outstanding accomplishment in 1927 was the design and production by the Pitcairn factory of the "Mailwing". Designed especially for night air mail service and combining the essential qualities of adequate load carrying capacity with speed and all round performance, the Mailwing has attracted much favorable attention. The General Air Transport, Inc., Cleveland Western Airways, Inc., Texas Air Transport, Inc., and Clifford Hall running the Cleveland-Pittsburgh Line are already using Mailwings on their routes. Thirteen of these planes will also be used on the New York-Miami Line. During the past year the gross sales of Pitcairn planes have totaled \$150,000 and the Pitcairn factory is now geared up on a production of one Mailwing a week.

A Personnel of 118

During the latter part of the year Pitcairn Aviation, Inc. has been concentrating on building up the organization necessary to handle the aerial line. The necessary executives, pilots, mechanics and experienced employees have previously all been secured and are now preparing themselves for the operation of this immense undertaking. It is estimated to take in passing that there are now a total of 125 persons engaged in all the various Pitcairn Aviation activities.

While this is only a brief summary of Pitcairn Aviation's activities during the past year, it is sufficient to give a brief overview of the outstanding accomplishments and of the foundation that has been laid for 1928. Pitcairn Aviation, Inc. has entered the new year with a clear and active, expansion and manufacturing program and with the confidence that by the close of 1928, aviation, when properly controlled, will be recognized generally as a sound business undertaking.



One of the Pitcairn subsidiary stations—headquarters of Pitcairn Aviation of South Carolina, Inc., located at Spartanburg Airport, Spartanburg, S. C.



Front quarter view of the Thaden all-metal monoplane the "Argonaut".

The Thaden "Argonaut"

All Metal, Six Passenger, High Wing, Cabin Monoplane is Powered With a Pratt & Whitney "Wasp" Engine

By D. R. LANE

ONE OF the best all-metal airplanes to be built in the west, a product of the Thaden Metal Aircraft Co. of San Francisco, Calif., has been test flown at Oakland Municipal Airport, christened at Crook Field, San Francisco and is now engaged in demonstration work. The company, meanwhile, has started construction of two more similar machines.

The test flights demonstrated satisfactory performance in every particular—the new system of controls functioned perfectly, the monoplane fuselage of corrugated aluminum displayed every merit reports; this had been anticipated and the plane exhibited the high speed, rapid climb and low landing speed which engineers of the company had expected of it. It also gave evidence of remarkable stability in the air.

The plane replaces many sections and some mechanisms, chief of which is a system of removable panels in the under side of the wings whereby every section and every bolt can be inspected at any time, in the field or in the shop. These panels can be removed or replaced in a few minutes.

Wing Span of 53 Ft.

The plane is an externally braced, high-wing cabin monoplane, powered with the Pratt & Whitney "Wasp" engine. It has a wing spread of 53 ft., a length of 36 ft., and stands 11 ft. high. The fuel capacity is 125 gal., enough for six hours cruising. It weighs only 2800 lb., but has a useful load capacity of 2500 lb. The cabin seats six or eight passengers in addition to the pilot, the power plant is arranged for six.

The present model is known as the T-3 but for two technical purposes it has been named the "Argonaut," after these powers of early-day transportation who built San Francisco

the city where the Thaden Company has its headquarters. Development of the plane is the result of an effort to give the advantages of a supporting surface or "skin" in great extent proper strength and rigidity, coupled with the desire to make use of the numerous advantages of metal as a material, crash-proof material which lends itself readily to production methods. The result is an extremely light plane which has a high safety factor, great carrying capacity, remarkable landing of simplicity and requires very little maintenance.

The fuselage is of monocoque construction. It consists



Top view of the all-metal Thaden "Argonaut".

of metal, stiffened at intervals with wooden ribs and, all of the ribs, with tubular dunnage bars. These dunnage bars are transverse, there are no longitudinal members whatever aft of the engine mount, the dunnage bars providing necessary rigidity in the fuselage structure.

The engine mount is constructed of metal tubing and is bolted in the forward bulkhead of the fuselage. As far as the middle member, it is enclosed in non-combustible material, allowing exceptionally fine visibility for the pilot. In a last George R. Pond, who flew the plane in its test flights, stated the pilot had unusually good visibility in the air and while making landings.

The wings are built up on dunnage box spars. They are braced with the same dunnage material as the fuselage. No struts are attached permanently to the upper portion of the wing, the under side carries the patented removable web developed by the Thaden Company, in conjunction with the ribs which are permanently attached.

The plane's control surfaces likewise are of dunnage and a rubber in combination in the end of the plane. The landing gear is of the split axle oleo-pneumatic type. Each wheel is mounted on a tripod system of struts, two struts in the rear part of the fuselage and one in the upper part. There is a wheel which the plane has a very wide track. Above it there is mounted a Grass shock absorber and there is a oleo-pneumatic shock absorber on the tail wheel.

Semi-rigid Wheels With Brakes

The wheels are semi-rigid airplane wheels, equipped with tires so arranged that braking power can be applied to either or both, to facilitate maneuvering on the ground.

The fuel tanks are in the wings and the fuel conduits run under the fuselage without entering the cabin. This, in conjunction with a fireproof bulkhead between engine and the cabin, eliminates all fire hazard to pilot or passengers. The motor is provided with two completely independent fuel systems. A flattened metal propeller with adjustable pitch is used.

The control surfaces are actuated throughout by push pull rods of the conventional cable. The shock of landing gear is replaced by a wheel suspended from the overhead network of the engine mount, rotation of this wheel actuates the elevator, moving it forward or back actuates the ailerons. The rudder is controlled through pulleys suspended from the fuselage bulkhead. The stabilizer is movable in flight through a wheel at the right of the pilot and the fin can be adjusted on the ground.

The cabin is arranged to give a maximum of comfort to its occupants. It is upholstered in rich material, laid over a waterproofing and heat-proof insulation. This insulation



Side view of the Argonaut fitted with a Wasp engine. Note the cabin door in the side of the fuselage.

maintains the interior of the plane at comfortable temperatures regardless of the weather outside and shields out the noise of the engine so that passengers can converse in ordinary tones. There is a heating and ventilating system to maintain a flow of fresh warm air inside the cabin.

Entrance to the cabin is through an oval door on the left side of the fuselage. This door shows a conventional automobile type handle and lock and the mechanism to automobile-type latching is contained inside. The cabin shows one of modern, supported on brackets so that the floor is clear and the passengers have ample legroom. There are windows on each side of the cabin and a panel of non-shatterable glass in the window just aft of the pilot's place. A luggage compartment is provided just aft of the passenger's section. The cabin is roomy and high enough for the average person to stand upright.

R. T. Todd, associate engineer of the Thaden Company, said of the new plane:

"By distributing the stresses of flight and ground maneuvering gradually into the skin it has been possible to eliminate such members as were formerly necessary to complete the framework or bracing. This type of construction reduces structural weight and solves many problems of production through simplification of detail parts."

Construction of the new plane has been carried out along the "production basis" methods which have resulted in such a low "production cost" schedule which have resulted in such a low "production cost" schedule which have resulted in such a low "production cost" schedule.



Rear view of the all-metal Thaden "Argonaut" manufactured by the Thaden Metal Aircraft Co., of San Francisco, Calif.

Examinations For Aero Engineers Announced by U. S. Civil Service

THE UNITED STATES Civil Service Commission announces the following opening competitive examinations:

JUNIOR AERONAUTICAL ENGINEER

Applicants are junior aeronautical engineers must be on file with the Civil Service Commission at Washington, D. C., not later than Feb. 28. The date for the assembling of competitors will be stated on these admission cards, and will be about 30 days after the close of receipt of applications.

The examination is to be conducted in various branches of the service throughout the United States.

The entrance salary is \$1,800 a year in the District of Columbia. After the probationary period required by the civil service act and when advancement in pay will depend upon individual efficiency, increased salaries, and the convenience of service, is a higher position. For additional details of Washington, D. C., the salary will be about the same.

The duties of this position are to perform such work as routine testing, inspection of engineering material, drawing up plans for new projects, preparing specifications for engineering material or apparatus, performing field work, making computations, preparing maps, assisting in conduct of experimental research tests, compiling reports, and handling technical correspondence.

Competitors will be tested on general physics, mathematics, general engineering, and aeronautical engineering.

Full information may be obtained from the United States Civil Service Commission at Washington, D. C., or the secretary of the United States civil service board of examiners at the post office or customhouse in any city.

New Superecharged Hawk Produced By Curtiss for the Army Air Corps

A NEW supercharged plane of the standard Curtiss Hawk pattern type has recently delivered at the Curtiss Aeroplane and Motor Co., Garden City, N. Y., with the cooperation of the Army Air Corps engineers. The first of the new planes, which are powered with the Curtiss D-12EF water-



Front quarter view of the Curtiss Hawk, Pattern P-5 with supercharger.

cooled engine, has been turned out and flown to Wright Field, Dayton, O., where it is to be submitted to official Air Corps performance tests.

The new type, which bears the Army designation P-5, is converted from the standard Hawk by the installation near the nose of the plane of a side-type exhaust driven supercharger. The latter regulates the mixture of air and fuel supplied to the carburetor and is able to maintain ground level readiness, at a cost, up to 20,000 ft. altitudes. The

usual fixed type radiator, somewhat larger than that of the standard Hawk, is another feature of the plane. As the supercharger is also carried to cool the air entering the supercharger. The engine pump, usually mounted on its crank case, has been lowered and is driven by a belt shaft.

A modified version of the regular D-12 engine, for 840, carries a heavier mechanical supercharger and is equipped with the Spitzer V-12 magnets and a special inverter air pump designed for use with the supercharger.

Loading Gear With Special Wheel

Another feature of the "Super Hawk", as the plane is called, is rigid landing gear with special wheels known but also shock absorbers and hydraulic brakes. This type gear was first used with success on the Fox Hawk fighter by the Curtiss Co. for the Navy last spring.

According to estimates, the Super Hawk will give results performance at high altitudes and is therefore especially valuable for combat purposes. It will enable a person, furthermore, between the air-cooled and water-cooled engine at high altitudes. Previously, these engines have been impossible under such conditions because of the loss of the supercharger water-cooled power plant.

A speed of 180 m.p.h. at 20,000 ft. and a service ceiling approximating the world's altitude record of 35,000 ft. are posted at the Super Hawk, although no official figure is available.

California Airways Co. Offers Night Flights Over Los Angeles

REGULAR NIGHTLY pay hops are now being conducted by the California Airways Co. from the Pacific Air Transport Terminal, Los Angeles, at Main Drive and Exposition Blvd. A Pacific Northwest company made the first of the night flights recently on the occasion of the opening of a feature party at one of the theaters, and so much favorable comment resulted that regular flights have been scheduled as well as the new popular advertising program to passengers there.

Art Burns, founder of the Los Angeles Airways, has attracted the attention on the special flight, which was illustrated by a series of great photographs. Kenneth Field, lighted at the Pacific Air Transport Terminal, which was established for one of the Los Angeles-Seattle mail line, made the complete possible.

The California Airways Co. was recently organized by Art Burns, Andy Larson, and Lewis Wells on a part-time basis. Burns was responsible for which the company is now under and has pioneered the idea of using new production planes for student instruction.

Westinghouse Publishes Booklet On Contributions to Aeronautics

"WESTINGHOUSE Contributions to Aviation" is the title of a booklet recently published by the Westinghouse Electric and Manufacturing Co. at East Pittsburgh, Pa. It is a way lighting and airport illuminations are discussed in detail, and explanations are given of the new position with.

Airport diagrams are also included, showing the arrangement of rotating beacons, color projectors, search light, boundary, approach, and observation markers. It also makes lighting of airports is treated upon, and the Navy's projector is discussed in the final pages.

The AIRPORT BEACON should be a FLASHING BEACON



Why?

For the same reason that the United States Government has provided that every lighthouse along our shores flashes a distinctly characteristic light for the information and guidance of marine navigation.

Every airport should have its own characteristic flashing beacon. Not only as an aid to air navigation but for recognition, being on the air map of the U. S. A.

Call it civic pride if you wish—but make your airport beacon one that will flash its distinctive code that stands for **your airport.**

B. B. T.—the pioneers in aviation lighting equipment—provide every lighting requirement. Airport Beacon Bulletin gladly mailed upon request.

B. B. T. CORPORATION OF AMERICA



Civilians Will Receive Service Pilot Instruction at New School

SUCH TRAINING as is the lot of the service aviator is now available to civilians at a new aviation school inaugurated in San Francisco, Calif., by Capt. Stanford E. Moss, recently commander of the aircraft squadrons of the battle fleet and Captain Moll Peed, a former instructor of instructors in the Army Air Corps.

The course extends over a minimum of four months. The ground work is done in San Francisco; the flying instruction is given at Oakland Municipal Airport. The first class in new receiving instruction. Classes are limited to twenty.

Provides Foundation for Development

The school's aim is to provide young men with a foundation on which they can develop, from time to time, the other training needed to make a career in aviation, while at the same time having them act as potential fliers within a reasonable period. Peed has direct charge of the instruction while Captain Moss is associated with him in an advisory and executive capacity.

The ground school course consists of instruction in basic principles of flight, practical aerodynamics, meteorology, navigation, aircraft engines, structure and rigging of aircraft and elementary mathematics, such as mathematics and physics. Flight training includes instruction in a dual control machine, practice take-offs and landings, compass steering, aerobically and cross country flying. Thirty hours are allowed as a minimum in the air.

Both the founders of the school enjoy distinction in the world of aviation. As commander of the aircraft squadrons, Captain Moss witnessed some of the most important developments in aeronautics of later years. Mr. Peed has been

flying for more than 12 years and made such a record as an instructor in the Army's air units that he was detailed to instruct men destined to the instruction of students.

Mr. Peed organized the first course in cross-country flying established by the Army and introduced the method of compass steering now in use there. After seeing service at Camp, the Army aviation school at Memphis, Chicago Field, Great War Field, Brooks Field and Mather Field, he was sent to Willow Wright Field to conduct reconnaissance into Europe in order for the improvement of aerial navigation, maintaining this until after the armistice. He was also engaged for a time in commercial flying through western California, being himself at Stockton. He purchased and operated between Los Angeles and San Francisco the Curtiss "Avion", the first to include passenger capacity ever built. He made 59 trips via this plane between the two cities in 1923, pioneering the present development, with one hour in regular operation over the route and two others projected for early establishment.

Syracuse Chapter of the N.A.A. Holds Its First Annual Dinner

THE FIRST annual dinner of the Syracuse Chapter, National Aeronautic Association, was held recently at Hotel Rensselaer. Ninety per cent of the total membership was in attendance. Addresses by Mayor Hanna, Clarence E. Forth, Syracuse attorney, Truman Preston, a lawyer, and Gordon E. Bond, president of the chapter and manager of the Municipal Flying Field, featured the program. A motion picture, "The History of Aviation", furnished by the National Aeronautic Association, was screened and made a decided hit with the members.

Cornell Flying Club Formed and H. W. Halverson Elected President

WITH THE formation of the Cornell Flying Club, one more college has entered the aviation ring. This club is an organization, principally of students in Cornell University, through it would be some of its most active members would extend of them, and it may be considered as a reorganization or a rebirth of the old Cornell Aero Club which functioned as early as 1909 and which contributed a number of prominent flyers to the aviation industry of today.

The new club was launched on Nov. 16, 1927, when a group of 15 interested men met for the purpose of organization. At that time it was decided that many similar clubs had gone to the rocks from too rapid growth and not enough careful thought and consideration. For this reason the decision was made not to accept any and all applications for membership, but to limit the successful candidates to those having a practical and lasting interest in aviation.

Plan to Buy Plane

At the last meeting, just before the Christmas vacation, the decision was made. H. W. Halverson, a Naval Reserve lieutenant and the most prominent figure in the formation of the club, was elected president. The other officers are: Michael Bechtel, vice-president, D. W. Koser, secretary, and L. C. Short, treasurer. Bechtel, E. R. Wright, J. S. Barn, Frank Leachman and several others also have had flying experience and a list of a number of those not active as fliers during the war. An aim as practical as the club plans to acquire a plane of its own for the use and instruction of members, but in the meantime it is considering several offers of individuals to furnish planes and flying instruction at special club rates. This phase of the club's activities must of necessity lapse until spring. In the meantime the club is fostering the initiation of a course in aeronautics in the Sibley College of Engineering of Cornell University and is planning to give some other ground school courses for members this winter. Likewise an attempt is being made to start a library of modern aviation literature in connection with the Sibley College Library.

The club offers a welcome to all fliers visiting Ithaca and expects them to get in touch with it. Correspondence from other clubs would also be appreciated. This should be addressed to the Secretary, H. W. Koser, Sile University Avenue, Ithaca, N. Y.

The Aviation League of Manitoba Is Organized in Winnipeg, Can.

WITH SUPPORT from many of the most prominent business men in Winnipeg, the Aviation League of Manitoba was recently formed in that city, according to General John R. Windsor there. Officers of the league are now organizing a light airplane club for the purpose of accepting in office of two machines from the Dominion Government for use in training fliers.

The league's objects are: 1. To foster, encourage, and advance the science of aeronautics; 2. To disseminate and keep alive interest in same and legitimate aviation; 3. To encourage and meet aviation groups or institutions in promoting the science of air navigation, and to promote modern air laws, flying regulations, and air training; 4. To prepare and distribute general and scientific aeronautical data pertaining to atmospheric conditions, flying fields, and air routes; 5. To encourage and organize volunteer air cadet squadrons for boys in which they can receive practical and theoretical instruction to prepare them for active participation in aviation.

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Span	42 ft.
High Speed (sea level)	120 M.P.H.
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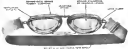
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Ed. Meyrowitz

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Fairchild and Canadian Vickers Rights Exchanged in Agreement

FAIRCHILD AIRPLANES are to be manufactured in Canada, and Canadian Vickers planes are to be sold and produced in the United States. This was brought out in a recent announcement that the Fairchild Airplane Mfg. Co. of Farmingdale, N. Y., and the Canadian Vickers Ltd., Montreal, have signed a 1700-page license agreement.

According to the present arrangement, the Fairchild Aviation, Ltd., at Grand Mass, Province of Quebec, which is a subsidiary of the American Fairchild organization, will be the selling agent in Canada and Nova Scotia for all Fairchild products turned out by the Canadian Vickers concern. The Canadian Vickers will install two plane manufacturing shops here, on the other hand, will be distributed in the United States by the Fairchild company. This plane is powered with an 86-hp air-cooled five-cylinder engine.

Since the arrangement between the two companies is non-exclusive, it is planned to have the engineering staffs in each field quarterly conferences at which the results of experimental research and equipment may be exchanged. Canadian Vickers has already begun construction of its Fairchild "AD-Fourteen" monoplane at its Montreal plant for Fairchild planes powered with the Wright Whirlwind engine have been sent for some time by the Royal Canadian Air Force, while among others delivered from the United States are two Vespas signed and delivered to the United States post office, which are to be placed in service in the Canadian Trans-Continental Airways of Quebec City.

American Legion Post Will Conduct Second Wisconsin Commercial Tour

WISCONSIN'S SECOND commercial airplane tour is to be conducted by the Altona Cadwaller Post of the Altona Air Legion of Milwaukee during the week of June 15 to 18, according to a recent announcement. So successful was the first tour, in which 15 planes carried considerable and representative of more than 100 of the state, that the second tour is to be increased to 25 this year.

The itinerary for the second tour, which is to include 25 planes and cover approximately 2500 mi., follows: June 15—Sheboygan, Manitowish, Oshkosh, Marinette, Green Bay.

June 16—Neenah-Menasha, Portage, Stevens Point, Waupun, June 17—Eau Claire, St. Paul, Minneapolis.

June 18—Rochester, La Crosse, Dubuque, June 19—Mauston, Rockford, Beloit, Madison.

June 20—Janesville, Kenosha, Racine and Milwaukee. Further arrangements for the trip, which is considered the longest made by the Altona Cadwaller Post, remain in the hands of which John H. M. Nichols is chairman. Others on the committee are Stuart Amer, in charge of planes and pilot, John P. Davis, in charge of sponsors, Harvey Street, W. F. Arnoldy, Eugene L. J. Elbert, airports, Harry Green, publicity, and H. M. Cooper, plane service.

Coast-to-Coast Passenger Service Is Planned by Boeing Airplane Co.

COAST-TO-COAST airplane passenger service is being planned by the Boeing Airplane Co. of Seattle, Wash., according to recent reports. Plans for service of 12 passenger will be made, it is said, if the passenger schedule meeting the East with the Northwest becomes a reality.

February 13, 1932

To Use 10 Passenger Bach Planes In New Air Service on West Coast

THREE THIRTEEN, 10 passenger Bach air liners will go into service between Portland, Seattle, and San Francisco. Mark 8, according to a recent announcement by Charles V. Baker, president of the West Coast Air Transport Co. The planes to be used are now being tested at the Santa Monica, Calif., factory and are due to arrive in Portland ready for service about Feb. 20.

More planes will soon be added, for within 60 days of the start of service the company plans to extend its line to Los Angeles. Further extensions will be made as rapidly as possible. Further lines are also contemplated.

One plane, it is stated, will make two round trips to Seattle from Portland daily, the second will make San Francisco trips every other day, and the third will be held in reserve.

The West Coast Air Transport Co. is a subsidiary of the Pullman Stage system, power bus line operation, and will be operated under its supervision. All its latest planes will be built by the air line, while the line's planes will take on express and mail from the hotel without added cost. The Han Air Transport will be used until the Port of Portland Airport is completed.

The planes are of standard construction, powered with Pratt & Whitney 325 hp engines in the nose and Hispano-Suiza 22 hp engines in the wings. The planes will be able to make good speed with only one engine in use, and second to the environment. It is expected that the speed with all three will be more than 160 mph.

Each plane will be equipped with landing gears, hot and hot engine, a lavatory, smoking compartment and electric lights and heaters. Each will carry a mechanic as well as a pilot.

First Aero Fraternity, Sigma Tau Gamma, Buys Chapter House

SIGMA TAU Gamma, alpha chapter of the world's first aeronautical fraternity, announces the purchase of a large bungalow on Normandie Ave., San Angeles, to be used as chapter house. So members of the fraternity, which was founded by the students at the Warner School of Aeronautics, are now at the chapter.

The official pro words by the members consists of a gold ring and triangle with the words "Sigma Tau Gamma" and "Aero" embossed on the triangle. A pair of gold wings with the letters W.A.S. is connected to the emblem.

The organization carries on research work in airplane design, while Sigma Tau Gamma and Florida have been first in its members. The chapter announces that it will be happy to hear from any who wish to join them in forming a national fraternity.

Senator McKellar Introduces Bill To Authorize Tennessee Squadron

SENATOR MCKELLAR of Tennessee has introduced a bill to authorize the State of Tennessee to acquire and maintain an Observance Squadron, Air Corps, as an independent National Guard unit.

It is provided that this unit shall be in addition to others provided and shall be regarded as an independent auxiliary of the National Guard. The bill is to be used in the event of emergency. For this purpose there would be appropriated \$200,000 for the first year ending June 30, 1933.

AVIATION



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each, keep on reaching the sleeping
plane — the owner, who chatter about
a plane that is having to require repair up
preparatory to taking off — all aware of
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Curtiss Export Corp. Capital is Increased As Market Expands

BECAUSE EXPANSION of its activities required capital, the Curtiss Aeroplane Export Corp. recently filed a certificate at Albany, N. Y., increasing its authorized capital stock to \$100,000, according to an official announcement of the company. The Curtiss Aeroplane and Motor Co., which will own an interest in the export corporation, is to make an exclusive long-term contract with the latter, it is said, making it the agent of the Curtiss Co. in all foreign countries. Other products will also be represented when their products do not compete with those of the Curtiss Co.

The Curtiss Aeroplane Export Corp., has represented the Curtiss Aeroplane and Motor Co., and its predecessors, in South America for about ten years. C. W. Webster, president of the company since its foundation, will remain in that capacity. C. M. Keys and J. A. B. Smith of the Curtiss Aeroplane and Motor Co., will be chairman of the board and its vice, respectively.

"This is a step toward carrying out the foreign policy of the Curtiss Co.," said Mr. Keys in referring to the new move. "Mr. Webster's company has done much successful work in South America," continued Mr. Keys. "We are therefore built our organization for the world's markets in this company rather than make a new one."

Los Angeles Awarded National Air Races to be Held This September

LOS ANGELES has been awarded the National Air Race to be held this year in September, according to a recent decision of the National Aeronautics Association contest committee. The issue will be held under the auspices of the California Air Race Association, it has been announced.

Competitive events at the meet are to include races between representative types of military and commercial planes, as well as two cross-country races. One of the latter will start from the Municipal Airport at San Francisco, while the other will be from the Oakland Airport. Bakersfield Municipal Airport will act as an intermediate control station for the races both of which are to finish at Los Angeles.

Cash prizes totaling \$25,000 have been placed on deposit. Rules and regulations are being drafted and will be ready for distribution at an early date.

J. W. Watson Co. Buys Waco 10 For Large Territory Sales Work

RECOGNIZING THE growing need for a quicker way to cover large sales territories, Harry Smith, factory representative of the J. W. Watson Co. of Philadelphia, has placed his order for a Waco 10. The territory that Mr. Smith intends to cover with his plane includes New York State and all of the New England States.

The plane will be delivered in March, and will be kept at the Substantially Airport until a T-shaped hangar can be constructed at a private landing field near Mr. Smith's home at Rosed Lake, N. Y.

A complete log will be kept of all flights, so that the actual value and comparative expense of using a plane for the purpose may be studied and determined. Mr. Smith will pilot the plane himself, his flying experience dating back to the days of Dushy, when Smith was a partner with Dr. Olen, the "Flying Swede."

Low Horsepower Engines Being Developed by O. E. Szekley Corp.

TWO LOW horsepower, radial air-cooled engines are under development at the laboratories of the O. E. Szekley Corp. of Flushing, N. Y. The first of these two, a three cylinder model planned to develop 35 hp., is rapidly nearing completion. The other, a 60 hp. five cylinder radial engine, is being assembled and both will be ready following the completion of one of the three cylinder models. A number of this first type are being built and it is stated by the manufacturer that they will have the plant and all satisfactory tests have been completed.

Both engines have 4 1/2 in. bore and 4 1/2 in. stroke with a compression ratio of 4.5 to 1. The first three cylinder model is complete and according to the manufacturer weighs 148 lb. It is expected to develop a maximum of 30 hp. at 2800 r.p.m. though it is rated at only 35 hp. However the weight reduction is expected to be reduced to 125 lb., completely equipped with magnetos and carburetor. The entire engine is built back to government specifications. The cylinder casting is of chrome nickel with integral fins machined after casting. The valves are in the head of the cylinder with both intake and exhaust and also the oil pump and its connections are in the engine block of all iron construction.

The engines are of very simple and economical design, being the result of a considerable amount of research and experimentation. The O. E. Szekley Corp. has for some time been doing experimental and research work on internal combustion engines both water-cooled and air-cooled. It is anticipated that a number of these engines have been ordered for delivery upon the completion of satisfactory tests.

Minneapolis Flying Club Starts With a Membership of Fourteen

THE MINNEAPOLIS Flying Club has recently been organized with a membership consisting of fourteen pilots, commercial fliers and other persons interested in aviation. Its purpose is to promote aviation in the city and instruct the interested people in aerial flying, a plan having been adopted for delivery shortly after the first of the year.

Leah, Roger J. Sargent, the head of this new organization, was an officer in the Royal Air Force during the war. There are fourteen members at present, who are planning on the most active program of actual flying of any club in the Middle West. This group will fill the vacancy left open since the Minneapolis Aero Club disbanded several years ago.

Selection of Key West as Airport Of Entry Considered Step Forward

A BID step, according to Treasury Department officials, was recently taken in the interest of commercial flying by the selection of Key West, Fla., by Secretary Mellon as the first airport of entry to be established in the United States.

Treasury officials said the great growth of commercial aviation has made it necessary to provide such ports where customs regulations may be started on, with the least possible inconvenience to shippers. That is only the beginning of such serious efforts, it is unofficially stated, and others are expected to be announced as their needs may require it.

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—you could well afford to take chances on your motor working perfectly. But they're not — and you can't.

You must be kept posted every minute, and posted accurately. You must know the very instant your motor starts to overhaul.

That's the function of the Bapez MotoMeter... and you can trust it without fear of its failing you.

No detail has been spared to make the Bapez MotoMeter accurate and dependable under both ground and flying conditions.

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The Modern Pony Express

STEARMAN Mail planes are flying on the Varney Air Lines and the Colorado division of the Western Air Express. Each airplane is completing six thousand miles of strenuous flying every month.



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air cooled, come in 5, 7,
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CORPORATION
San Diego, California

Major Robertson Resigns to Head Curtiss-Robertson Airplane Mfg. Co.

A COMMUNIQUE received by AVIATION from Maj. William B. Robertson, of the Robertson Aircraft Corp., St. Louis, Mo., states that he is resigning from the presidency of the Robertson Aircraft Corp. to take up his new duties as president and general manager as well as director of the new Curtiss-Robertson Airplane Mfg. Co., a \$500,000 stock corporation with all stock fully subscribed.

The company will meet at a factory on the flying field that is a part of approximately \$50,000, and is being placed so as to run out and manufacture one airplane a day. The company will manufacture a number of different types of planes that will accommodate two passengers and a pilot. The planes will be upholstered and it will provide the inside of a fuselage. It will be powered with the Curtiss O-20 engine of which the new company has contracted for 1199 from the Robertson Aircraft Corp.

This airplane was designed by the Curtiss engineers at Major Robertson to fit a long tail used for a cabin airplane at a nominal price. It is estimated the selling price will be in the neighborhood of \$25,000. The nature of the new plane will be the Curtiss Robin, which is analogous to the Curtiss of the new company which in the Curtiss-Robertson Airplane Mfg. Co. The Curtiss engineers have been taking the Robin on the road, and the performance is very superior. The company's officials believe it will have a top speed of 100 m.p.h. and a very low landing speed, and will have a cruising radius of 500 mi.

The plane was designed to give a maximum amount of velocity as well as comfort. The first two Robins will be manufactured by the Curtiss Aeroplane & Motor Corp. at Garden City, L. I., N. Y., and the new plane will be shipped to the factory at the St. Louis Flying Field, and the planes will be manufactured and flown away from there.

The company has secured the services of Ralph Stone, who is now the superintendent of the Curtiss Aeroplane & Motor plant at Garden City, and he will have supervision as to the change of production at the factory. The Robins will be sold as a Curtiss product.

This new company, the Curtiss-Robertson Airplane Mfg. Co., is very eager in that the Curtiss Company accumulated military airplanes for the past 28 or 29 years, and together with Major Robertson, who has had nine years of successful experience in commercial aviation offers a combination that should prove successful.

The Curtiss Robins will be sold through the general supply plan of distribution who will be selected one to each city, and an added feature to the new distributor's proposition will be that they carry a limited amount of supplies and spare parts for the Robins. The new company will begin, gradual for the factory in the next two or three days, and it will be finished and actual production will begin on April 1. The Robertson Aircraft Corp. will continue on with Major Robertson's brother, Frank H. Robertson as president and general manager.

Pilots Are Warned About Conditions Of Naval Field at Anacostia, D. C.

THAT THE center of the land plane field at the Naval Air Station, Anacostia, D. C., is in bad condition for use of landing and taking in the warning issued by the Hydrographic Office, Washington, D. C., following a report from the commanding officer of that station. Pilot concern is expressed to see the condition of the field at the south range.

Foreign Aeronautical News Notes

By Special Arrangement with the Transportation Division,
Bureau of Foreign and Domestic Commerce

To Connect Berlin and Peking by Air

Fast air service from Berlin to Peking is to be inaugurated by the Deutsche Luft Hansa as soon as the political situation in China permits, declares Dr. Oskar Mergel of that company. The latest German planes that will offer full cooperation to the new German service which according to indications will find plenty of business, large revenues being promised by mail also.

The passage from Berlin to Peking would theoretically take two and one-half days should a speed of 200 m.p.h. be maintained. Present planes, however, will for daylight flying time which would mean five days elapsed time for the trip. A great saving of time will be accomplished by the air service, as the 21 day journey by the Trans-Siberian railway is the slowest approach to this promised schedule.

Berlin To Hold Aviation Exposition

Berlin, Germany, is to have an International Aviation Exposition this year Oct. 7 to 26 under the auspices of the German aviation industry. The exposition is to be managed in cooperation with the Exhibition, Fair, and Tourist Office of Berlin. Assistance of the government, which has shown great interest, has been secured.

German Airports Form Association

In order to keep informed on advances in airport equipment, structural construction of hangars, lighting and signaling systems, and similar matters, 54 German airports have banded together into an association, reports the American Commercial Attache at Berlin.

Membership in the association is open to all airports subject to approval. Nine members appointed for two years form a representative board, while committees may be named for certain work. Regular meetings are to be held once a year at which ideas will be exchanged.

Planes Now Carry Prospectors' Mail

Airplanes now replace the dog teams which for years have been carrying mail to the prospectors in the Bad Lake gold area north of Staden, Ont., according to reports from Wausage, Man. The new air mail service was recently begun by a Winnipeg company.

Yokohama To Have Aeronautical Institute

Construction of an aviation institute in Japan is now \$500,000 is planned to begin late this year in Yokohama, according to reports. The institute is to be established to further aeronautics in the islands.

For eight years
Swallow has found
HASKELITE
to be superior!



A RECENT letter from the Swallow Airplane Manufacturing Company, Wichita, Kansas, says "As you are no doubt aware the Swallow Company is the oldest builder of commercial aircraft in the United States and during the eight

years of operation we have found HASKELITE plywood to be far superior to plywood made with casein glue."

The conclusion of the Swallow Company is shared by practically every important company in the field.



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Small
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Reasons Enough!

Simple design — Built by side
valve ports and direct exhaust
ports from the cylinder head
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ports from the cylinder head
— Simple and direct exhaust
ports from the cylinder head
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ports from the cylinder head

STANDARD MOTOR CORPORATION
NEW YORK
NEW YORK

Side Slips

By ROBERT B. OSBORN

Mr. B. D. calls our attention to a speech made a few weeks ago by a former aviator, in which he made some statements concerning the future of aeroplanes. He stated that it would not be long before we had traces of a number of aeroplanes being pulled through the air in the same way that trains at railroad crossings are run today. His audience pressed him for details, regarding what would happen if the power plant at the first aeroplane in the train failed. He said that the train would simply reverse as that the "deadhead" at place would be on the rear of the train. Of course this may be taking liberties with aerodynamics of aeroplanes as that theory is accepted today, but we must agree that that is all we think, though, that the system proposed by the aviator shows the same idea diverging for the safety of the passengers as might be expected from one of our trans-Atlantic passengers of the year just past. We refer to the ship which attempted to fly the Atlantic from England to America but went by India instead, as the weather was better in that direction. It certainly would be interesting to hear the comments of the first aerial trans-Atlantic passengers who found themselves in India instead of New York. It seems the engine stopped on the first plane just as they were pulling out of Atlantic.

Whisper aside to G. M. B.—Would like to help you out but as a matter of fact haven't a single spare. It was just a lot of blarney, was it?

In an article in the trans-oceanic liner which Captain Chamberlain started on Jan. 25, a New York paper says "The people realize the magnitude of the 300,000 only trip the complete—on the ferry." It does seem unbelievable.

Another item in the same paper—
"DANE PLANS ATLANTIC IDOL"
Charles Raymond, a locomotive engineer and secretary of the Lodge of the Brotherhood of Locomotive Engineers, is in the Massachusetts Hospital at Yonkers today, suffering from a shoulder which would radiate during a night with two hot up men last night.

The other hold-up men apparently didn't make any statement on his plans for a getaway.

Mr. O. S. I. tells a good story about a student he was training during the war. This student was a very good but had the falling that as soon as he got off the field he would be lost completely. Mr. I. was doing his best to get this falling as the year of a good student, and being in phase that he had been wasn't far from the training field said that student if he didn't think he could find his way to his own house and back to the field again without getting lost. It would be a very easy way they started off. They had got where it should be the right direction for a time, when the plane went up on a steep bank for a left turn. A short time later came a steep bank for a right turn and Mr. I. was beginning to wonder what was wrong with his pupil. It wasn't until after the next bank that he realized that the student was flying his ship home the same way he would be, along the road, and when the road made right sharp turns on the ground he had to make the same sort of turn to keep himself oriented.

AIRPORTS AND AIRWAYS

Toledo, Ohio

By David A. King

Just along records in Toledo west looks recently, it said about the character of commerce and economic condition of the city \$257,253 worth of airport work in the record of 1931—like time it took London to fly the Atlantic.

The airport, comprising 245 acres lying near water from its position, will be made a step on the trans-Atlantic and will be operated by the National Air Transport, N. A. T. 2 airports are now installing because over the night flying routes from Chicago and Cleveland to Toledo.

A few months ago, during the shock of a majority campaign, the city leased a large tract of land and built a 100,000 square foot hangar. This field, located in the city, was later turned over to the National Air Transport. The new airport, however, fulfills every requirement of the Department of Commerce and probably will be given the highest rating. Capt. Henderson, general manager of the N. A. T., made an address at the conclusion of the airport work which is installed great speed increases in aerial transportation and asserted that his company had already placed orders for planes capable of cruising at 140 m. p. h.

A feeder air line is to be put in operation between Detroit and Toledo within 90 days, according to reports. A new airport will be dedicated early in the summer, it is added.

Richard Wall, president of the Yellow Cab Co. of Toledo, has taken several hours last instruction and is the owner of the airplanes—Anno three plane and an Ansonia one plane. The largest plane, a 100,000 sq. ft. and a test flight was made by Russell "Curley" Hinkle.

Thomas R. Mason, young attorney, has announced his intention of specializing in aviation law and now is engaged in studying cases in which aircraft have played a part. Mason is scheduled to address the Toledo police department members on the U. S. Department of Commerce Air Regulations.

Detroit, Mich.

By John T. Needt

Just John Price, of the Automobile Branch of the Department of Commerce, recently assigned to Detroit, advised approximately 50 members of the civil air service recently at the Detroit National Hotel. His speech on the subject of air regulations in the interests of safety and economic air travel.

Frank W. Blair, president of the Union Trust Co. of Detroit, member of the "Wing Club," and one of the city's most influential aviation leaders, recently was presented with an illuminated world globe, signed by some of the best known men in the industry. The name of Corville Wright appears on the globe.

Robert H. Blair, the signatures and inscriptions of their flight have been made on the globe by Leroy John McCondy, Leroy John McCondy, Capt. H. C. Hinkle, Maj. Thomas D. Lamson, Edward F. Seiber, and William Brock. The globe was presented to Mr. Blair by Ray Collins, manager of the Union Trust Co.'s aviation department.

Information that Detroit's reputation of a municipal airport will be put in as soon as possible was seen in the report of a group of men of Mayor John C. Loggins, who is municipal manager of the city.

A group of men of Col. Charles A. Lindbergh. After de-

vising some time to the importance of attracting the fast growing aviation industry, Mayor Lodge said in conclusion: "As members of the county legislative body, we must concern ourselves with the speedy acquisition of a suitable airport, located as near as possible to the county's center of business activities, downtown Detroit."

Leroy John McCondy, Jr., one of the Army aviators who visited the globe in 1927 and now connected with the Associated Chamber of Commerce of America, Inc., arrived in Detroit recently to confer with Ray Collins, manager of the airport, Detroit Board of Commerce, relative to the Detroit Airport, scheduled for April 1932.

As a representative of the Associated Chamber of Commerce of America, Lieutenant Harbison remained in Detroit several days, cooperating with Mr. Collins and the show committee.

Capt. Philip Hinkle, World War pilot now with the Union Trust Co. bank, has been placed president of the newly organized Union Flying Club, which is composed solely of



Capt. Ray Collins presents a world globe bearing the signatures and flight records of various flyers to Frank W. Blair, president of the Union Trust Co. of Detroit. Captain Collins, who is manager of the company's aviation department, is shown tracing one of the flights.

Union Trust Co. employees. Other officers of the club are Alford Hall, vice-president, and Ernest Jackson, treasurer.

The club plans to purchase an old plane for the study of ground work and mechanical details. Games once a month featuring lectures by aeronautical authorities are also planned.

Frank W. Blair, president of the Union Trust Co., is chairman of the Detroit Events Committee of the Detroit Board of Commerce which is in charge of the plans for the National Airports Reliability Tour, the Gordon Bennett International Balloon Races, the All-American Airfield Show to be held in Detroit April 14-22, and the National Model Airplane meets, indoor and outdoor divisions.



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New Orleans, La.

By Theodore R. Lamm

"There should be at least two airports in New Orleans," stated William P. MacGibbon, Assistant Secretary of Commerce in charge of aviation, while making a tour of the Capital Airport, recently. "The present airport has no facilities and is at all right," he said, "but there should be two more airports on the field. Between and between they should be in operation by the time the air mail starts."

The assistant secretary and the city of New Orleans should spend not less than \$1 per capita on airport facilities in the next 18 months. "It is just as essential to have a good airport as it is to have docks," he said.

The Department of Commerce's partly appropriation in the New Orleans-Airports act and will be available July 1. Installation of the airways lighting will be started this week and the work is to be completed within two months, at which time the air mail operations will begin.

An aerial survey of the proposed air mail route from New Orleans to Brownsville, Texas, via Houston, obtaining via the Mexican air mail line to Mexico City, started recently when William DeWolf, representative secretary of the T. Tammey Gulf Coast Airways, Inc., took off from New Orleans to Houston in a two-engine Fordor Dornier.

The St. Tammany-Gulf Coast Airways, Inc., hopes to convince the government that the route from New Orleans through Houston to the border at Brownsville would be the best for the government could choose to connect with the Mexican line.

Mail service between the United States and Mexico and Central America may shortly become a matter of hours instead of many days through the scheduled service of a large scale air mail contract in Guatemala City recently. The best planes and air mail services are added for in a contract to begin that mail service within two months that will connect New Orleans, Guatemala, Panama and Mexico.

A model airplane met in being planned by the New Orleans Model Airplane Club, according to Harold Brier, president. The model will be built according to plans on the City Field football field. There will be classes for two classes—the wing class and scale models. Prizes will be awarded to the winners. Local aviation will be asked to officiate as judges.

Oklahoma City, Okla.

By Bruce F. Fox

Plans for a celebration in recognition of the establishment of night air mail service over the Dallas-Oklahoma City-Gage route of the National Air Transport Co. are in the hands of the aviation committee of the chamber of commerce under the direction of H. C. Martin, ex-aviator. A total of \$1,000 has been spent on improving the local field in the last year in preparing for night air mail.

Air mail figures for Oklahoma City during the past year have been revealed. They are: Jan. 806 lb., Feb. 444 lb., Mar. 504 lb., April 735 lb., May 762 lb., June 802 lb., July 762 lb., Aug. 765 lb., Sept. 777 lb., Oct. 752 lb., and Nov. 827 lb.

Steps to obtain funding of the proposed government air mail line to Mexico City through Chicago, Kansas City, Oklahoma City, and San Antonio were taken up by the local chapter of commerce at their last meeting. A recommendation is being made to submit a plan for Oklahoma City on the south-western air mail line.

One of Oklahoma City's needs, H. W. Parker, manager of the National Air Transport has said, is a better airport. He is working on plans to present to the aviation committee of the chamber of commerce for a better modern airport to be constructed at the field near water.

The Southwest Airways, Inc., of which Bob Tarkenton is president, recently arranged with the Southwest Radio Air

February 13, 1938

line for an airplane display in its downtown show windows. In February was placed in the window and situated north window.

The Oklahoma City Aero Club has temporarily suspended plans, but is planning a banquet for the air-minded citizens in February or March. The banquet will be open to the public and will be held in the hotel T. H. G. A. Terminal and other members of the city will be speakers, George Jones, one of the officers, has announced.

"Oklahoma City has the most advantageous position of any city on the night air mail route" said Charles D. Braun, general traffic manager of the N.A.T.C., on a recent visit here. "Night air mail to go into effect here will replace all air mail service."

H. C. Martin, chairman of the aviation committee of the chamber of commerce, is signing an air mail line from Oklahoma City west to Amarillo and El Paso in the West and Mexican points and that such a line would greatly increase service, since the new night schedule will mean a day of 22 hours in San Francisco by way of Chicago.

J. Reiley, who was partner with Russell Griffin in a suspended Pacific Light, is laying plans for an endurance trip in his Ryan monoplane. His plans to carry 250 gal. of fuel. Joe Mark, Oklahoma City, will accompany him.

A landing light for the municipal airport has been planned. A. E. Warner, head of the field equipment company, will be in charge of the light, which will throw a beam 2000 ft. to the air.

Fish, Okla.

By Fred L. Foster

The general school class sponsored by the local chapter of the A. A. is proving a large success. The first meeting brought an attendance of 138 and new settlements are being in rapidly.

In the McIntyre Airport the flying school has an enrollment of 51 pupils keeping these instructors busy every day of the week. The splendid water flying machine reported in the past is possible to carry an flying instruction without completion and the school expects to turn out a large number of trained pilots during 1938.

The new Mooney monoplane recently purchased by D. A. McIntyre, of the McIntyre Airport, has been kept busy constantly since its delivery on some evening trips. Mr. McIntyre explained to the members of the board that he has been making upon them for the use of this plane for long-distance trips and states that he has reservations for and for the use of the plane by business men who realize its economy and advantages of air travel.

Four new steel hangars have been built at the McIntyre Airport to house privately owned planes recently purchased in Tulsa business town. This makes a total of 10 individual hangars now on the field and Mr. McIntyre states that four more are to be built immediately.

To Make Endurance Flight in Ryan Plane

A new Ryan monoplane was recently delivered to Robert F. Bland local representative of the Ryan plane. The plane being made ready for an endurance flight to bring the mail line to Germany, back to the United States. Mr. Bland is one of Oklahoma's greatest aviation enthusiasts and is determined to make an event popular among our citizens.

During the past month an average of 20 foreign planes visited the McIntyre Airport for service each week and the number is to be increasing steadily. This airport is equipped with every modern service facility and is rated by pilots as one of the best privately owned and operated



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livered an address. He also told of the most good will tour of the United States, on which he accompanied Major Higgins.

New Jersey's legislature is expected to appropriate \$100,000 early this year to provide for the Air Corps and a field that is being enlarged to include 400 acres has been secured four miles from Trenton. When engineers are ready, construction, now completed, seven or eight planes will be assigned to the new area.

The new Air Corps will have a complement of 100 officers and men, with two Army officers acting as instructors. Robinson has been back, speakers said. The meeting was attended by representatives of trade organizations, National Guard and Reserve Corps officers, and other interested organizations.

The South Jersey Aviation Club, with headquarters in, stated officers for the coming year at its January meeting. Maj. E. A. Gurnea, Air Service Reserve, Camden, was elected president, the same officer he has held since the organization's founding three years ago.

George Chandler of Woodbury was elected first vice-president to succeed Capt. Charles H. Harney, A. M. Chandler of Camden was elected second vice-president to succeed Capt. F. J. Schenckels, L. R. Berling of Philadelphia was elected secretary to succeed Capt. Harry F. Field of Woodbury was elected treasurer. The club has 122 members.

Chicago, Ill.

By H. H. Starnes

The Chicago Daily News has announced the purchase of a simplified four-lane one and for the improvement of the development of aviation. Shirley T. Short, who was named as "the world's most valuable aviator" by the International League of Aviators in 1925, has been engaged as staff pilot. Short's first assignment was to convey a Daily News airplane before recent news to Havana to cover President Cullig's visit to the Pan American conference. Returning, the plane landed safely at the Chicago municipal airport in a gale which reached a velocity of 65 m.p.h. It required 21 men to hold the plane down after it had stopped.

Three men pilot licenses have been recently granted in Chicago. William F. Bauer, 3543 S. Wabash Ave., Dallas M. Spivey, 6524 Kenwood Ave., and Joe M. O'Brien, 501 W. Audine Ave., are the men who passed the tests.

Pilot L. H. Harrison, flying a N.A.T. road plane, established a new speed record between Chicago and Cleveland in a record eight days, according to reports. The 315 mi. was covered in 3 hr. 55 min., an average of 344 m.p.h. The old record has been made twice in 2 hr.

Miss Tina Kuehn, German aviator, plans to hop off from Chicago if she makes her anticipated one-day Adams flight next summer. This was the announcement on her recent visit here.

Miss Johnson Tells of Her Flights

Miss Mildred Johnson, magazine writer and lecturer, recently made lectures here, telling of her flights of more than 20,000 mi. over United States air mail lines.

An additional lesson for the Chicago-Texas Cities route is to be installed on a water tank at the Edward H. Hopper grounds at Maywood, it has been announced.

Two airplanes will be operated each way daily by the Chicago and San Francisco, under arrangements soon to be put into effect by the Boeing Air Transport Co., it is reported. At present the service is handled by one plane.

A new air transport line between Detroit and Chicago is contemplated by the United Airways, Inc., of Detroit. It is to serve interesting Midwestern and Indiana points and offer passenger and freight service.

Celebrity, Ill.

Mr. M. Doyle, local Waco dealer and owner of McBoyle airport, has been studying the effects on selling airplanes to women and as a field toward commercial promotion and success. The practicability of the theory is well brought out at the case of Walter Kline, manager of the Klineer Fly Co., Chicago, Ill., who was in Waco 12 to enter sales agency at times when heavy storms have delayed the roads.

Another instance of the value of the airplane was recently noted. In this case a small paper part was delivered by plane in record time, making possible the continued use of a road which of course would have seriously delayed transportation.

Harvey Hess of Shickler, Ill., dealer in rubber, was a new Waco 12 for delivery and serving rubber sets in outlying districts. Mr. Hess is well satisfied with the plane which after delivery in less than 10 min. it was taken off in his plane. Hess is a farmer's field, install a set, and he back again for more rubber in less time than it takes to get it," Hess said recently.

E. Dwyer, who also owns a Waco 12, was his airplane in a variety of the various jobs done by his first of similar work which operates in many parts of Southern Wisconsin. He contemplates the purchase of a second plane.

Woonsocket, Ill.

The special Waco 12 which Capt. Joseph T. Donahue is using in his 18,000 mi. flight through the South American states was delivered by the Midwest Airways Corp. here. The plane, powered with an OX-5, has a 300 gal. gasoline tank needed in place of the regular four-seater cockpit.

Other recent deliveries from the distributors outside Waco 12 to the Harney Bros. of Shickler, Ill., and the Aerial Sport Co. of Danville, Ill. A second order at Waco to go a stage and spring delivery, has been ordered.

Boise, Idaho

By Robert Dickinson

In Idaho aries, Miss Helen Peck of Boise, has left on an air tour of the United States. Her ambition on this trip is to visit every airport reflecting national for vintage, interest and prestige.

Going to an injury is an act of cowardice, Miss Peck's philosophy has advised the open air. Her decision to use an airplane for her tour has been declared "quite unusual." Miss Peck will use the regular commercial airplane in her flight. C. P. Dwyer, superintendent of the Boise schools, has been asked to serve as a committee on the Grangeville Road for the Promotion of Aeronautics, his work to concern elementary and secondary aeronautical education, it was recently announced.

Gresham, Idaho

Being moved in Northern Idaho recently caused funds which arrived every railway bridge that interrupting transportation and causing an acute food shortage.

Not a minor, Spokane commercial flour, powdered gravel and this is varied Gresham and dropped 40 lb. of peas, thereby providing the town from a bread famine. Supplies needed by the Idaho State Sanatorium located at this town were also able to plane.

Wassenaar Home, Idaho

The home of 50 mi. east of the Boise Airport, is now arrived at a most beautiful place. The site is located two and one-half miles out of town and is well adapted for an airport. The home is located in a most desirable location. The owner, to include this property, a house, light, gasoline station, a fine shop and garage.

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FOR SALE

For sale: Two K-6 motor just overhauled \$250.00 each. New Orleans Air Line, New Orleans, La.

Attention aviation! Graphite valve guides threaded into OX and OXK cylinders. Removable valve seats installed. Complete parts, cones, traces and descriptive literature upon request. Ill. Plycor Co., 507 Locust St., St. Louis, Ill.

For sale: Super-Hisco motor, perfect, \$750.00. Anasco 30 cfm. like new \$200.00. OXK's with Seafoam and special valves like new \$200.00. OXK's with special valves good as new \$200.00. OXK and OXK cylinders with special valves better than new, each complete \$15.00. OXK motor and parts as new \$200.00. Sealing and Dine \$25.00 not new but perfect \$25.00. Bushmore new \$100.00. Many other parts would sell at an interesting party cheap; are taking up a new line. Jack Krenzel, 1700 East Ford St., Wichita, Kansas.

For sale: Aeromarine 20 H with 1201 landing gear, Hisco model "A" motor. Ship and motor as good as new. One Lear, 1928 OXK model damaged, an "H" has motor, very easy to rebuild, \$750.00 credit \$245.00 with OXK complete, all accessories \$850.00. OXK motor good \$150.00. Hisco model "A" 150 hp, completely rebuilt and guaranteed, with tank \$475.00. Hisco 220 hp, converted to 180 hp, used and disassembled, with lots of spares \$150.00. Box 784, Avonlea.

C-6 casehobby brand new, \$65.00 each, Schellie Whitehead motor, \$75.00, OXK's cylinders new, \$50.00; pistons, \$1.00; fourth cylinder \$10.00. Hisco 180 cc. barometer new, \$35.00. Many other parts. Write your needs. Air Transport Equipment, Inc., Carlo Place, N. Y.

One Standard and One Jumbo, both new motors. One model A Hisco, two OXK motors, one Canam with OXK-A. Also Standard wings, fuselages and fittings. Stock priced right. Write us. Ill. Locust Airline Co., Lehigh, Pa.

For sale: Two factory overhauled Wright J-4 H, one overhauled Wright J-5 C, one Standard motor standard OX-A, OX-B, one new government overhauled OX-B; two new Hisco magnets, two and a cylinder bench magnet. Reynolds Airplane, Inc., 420 Lexington Ave., New York, N. Y.

For sale: Airplane skin built for service by Taylor Brothers, 47 Allen St., Rochester, N. Y. Will fit any three place ship. \$250.00 per pair.

First \$200.00 takes new Anasco 30 hp, motor complete. J. A. Hillon, Idaho, Wash.

For sale: OXK's shipped with Standard motor bearing 1450, \$750.00. OXK's replacement \$10.00 to \$25.00. Five OXK motor \$150.00. OXK's motor \$300.00. Wing spars Standard and upper \$25.00, lower \$15.00. Canam Jumbo, upper \$25.00, lower \$15.00. Wing 81.50. Wing 81.50 new cloth. Quincy Airplane Co., 2534 Bluepoint St., Quakertown, Pa.

Will install new OX-A Standard. Ship has only one new hour. Ready to fly away for \$225.00. Ross Motor, Fairfield Air Depot, Fairfield, Ohio.

Some good bargains: OX Orville, new as new \$200.00. New Jumbo, original read, new motor \$1400.00. Jumbo A1 with motor \$800.00. Jumbo, new motor \$200.00. New motor \$300.00. TM Social new motor \$300.00. OXK Standard \$750.00. Bob Shank, 730-64 Ave., Washington, W. Va.

For sale: OXK completely overhauled—new rings and valves—Sealing magnet—best cut-off taken in. Also set Standard tail surfaces, motor seating; two efficient overhauls—"A" condition—for cash. Van Gwyny, Fitch, Ohio.

For sale cheap: Engineless airplane, OXK motor, split type landing gear, dual controls, compass. Only 4 months old. First offer taken in. Ready to fly away. Write or visit Jack Young, 1145 Barnes St., New Orleans, La.

Five brand new motor with aluminum pistons, 145 cc. 100 hp. 100 hp. 100 hp. 100 hp. 100 hp. Complete \$50.00. Stinson Aviation Co., Ash Grove, N. C.

Sale: Four short Standard J1 upper wings. Speed as your Standard! In good condition. \$130.00 each. R. J. Wagner, St. James, Miss.

For sale: Fokker D-7 in good condition. Radiator, engine, propeller and motor section. Struts standing, otherwise complete with 100 hp. Hall-Scott motor and instruments. \$600.00 cash. O. Klumpfer, 549 N. Vance Ave., Wake, N.C.

For sale: Genuine model K Hispania, also new production piston, magnet breakers and 380 by Hispania. All tried to sell and guaranteed. Green H. Hoffman, 1086 Pelham Ave., Detroit, Mich.

For sale: Navy steel basket 115 by 30 lbs. carrying \$1400.00. Cash. Overton, C. J. Smith, Charleston, S. C.

Standard J1, OXK motor, turns 1000 in air; Eas good, dual controls, all instruments. Price \$550.00, less motor \$250.00. Lock Box 218, Breckenridge, Kans.

Three rebuilt OXK motor come as brand new, \$250.00 each, or \$200.00 for the lot. Overhauled OXK, \$200.00, and others. James Aircraft Supply Co., 4672 St. Louis Ave., St. Louis, Mo.

Search with 190 Hisco, beautifully polished; four place ship, price reasonable. Cannot be sold from new. A small deposit will hold same for spring delivery. Ship is in New York City. E. E. Westmoreland, 2714 New York Ave., Brooklyn, N. Y.

EQUIPMENT WANTED

Wanted: OXK-OXK motors and parts or any and set of steel aircraft material. Send list of what you have for sale. Name lowest price and full condition. Box 776, Avonlea.

Wanted: Waco 16 in good condition. State number in last letter, equipment and price in first letter. Address P. O. Box 325, Anderson, S. D.

Wanted: Hispania Wing for Canam, must be in good condition. Write or wire Ed F. Smith, 354 Anderson St., Henderson, N. J.

Wanted: Waco No. ten or Engineless, good or poor; must be proved for cash. Theo E. Kuehn, 1800 E. 10th St., Detroit, Mich.

Wanted: Used OX-A motor or parts. Also OXK's with cones and OXK-B crank cone. Box 782, Avonlea.

\$100.00 for your old OXK motor if it is complete. Box 785, Avonlea.

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Wanted: Late type Canam, less motor, instruments and seat approved. Must be in good shape and bargain. Not to be given upper Mustang. State exact condition and also need understanding material. W. Pata, 1935—1st Ave. N., Ansonia, Mich.

Wanted: Model H Hisco motor. Must be in best condition. American Eagle Aircraft Corporation, 1800 Main St., Kansas City, Mo.

Wanted: Parts for building one or two place ship; will do or have OXK ship, last parts or ships for sale or exchange. American Eagle Aircraft, Peabody, Mass.

Wanted: For cash, West Nile fuselage with tail group and wing. Price must be right. Any condition. B. S. Campbell, Advance Thrift, St. Augustine, Fla.

POSITIONS WANTED

Wanted: Pilot twelve years, all types, 3,000 hours. Good engine, right flying. Desires to connect with reliable owner or provide aerial. Prefer some security work. Box 1, Ansonia.

Wanted: Parts connection with aircraft factory or good locally. Experience selling diesel and rebuilding dealer machines. J. C. Cullen, 139 River Ave., Bostonsville, Pa.

Experienced man wants work in airplane factory. Completed Naval Aviation Training Course. Assembling department. Experienced. Ralph A. Sawyer, 923-1st Ave., N. W., Duluth, Minn.

HELP WANTED

Wanted: 15 experienced mechanics to rebuild OXK motors. Aviation Aircraft Corporation, Arlington, Mass.

Wanted: Transport pilot. Must have ability to manage work. Ready position. State qualifications, salary, etc. James County Aviation Co. Inc., Philadelphia, N. J.

Wanted: Stock clerk for large aircraft repair shop. Must have experience preferred. Permanent complete employment in first letter and state salary required. Box 784, Avonlea.

Wanted: 3 transport contractor pilots with or without fixed seat, who could later build three-place plane. No experience, compensation desired and references. Box 10, Ansonia.

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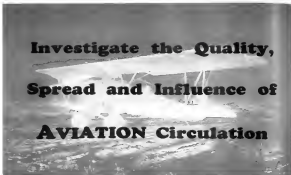
Wanted in brand new 220 Hisco converted for engine use. Not subject to new job, wonderful performance. Best look at. Will like Canam or Hisco motor in trade. Hennes 110, Box 10, Ansonia, Mich.

In lot of 3 down 48 x 180, variable for airplane factory. 74 x 11, 1/2, Woodfield, L. J. Thomas, 11, 11th, Kansas City 4, Mo. or St. Paul, Minn., L. J. N. Y.

Will look high grade closed air such new motor for 400-500 of the Waco or Standard type in good condition. Write Bert Reilly, 3820 N. Main Ave., Chicago, Ill.

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The above paragraph is an excerpt from a letter from Mr. B. L. Gross, president of the Great Aero Sales Company of America, telling of the results obtained from a quarter page ad which is appearing in AVIATION. That we had one of many examples which we are showing in this space of the successful influence of AVIATION as an advertising medium for anything pertaining to the aircraft industry.



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